RFC788

SIMPLE MAIL TRANSFER PROTOCOL

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November 1981

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1. INTRODUCTION

    The objective of Simple Mail Transfer Protocol (SMTP) is to transfer
    mail reliably and efficiently.

    SMTP is independent of the particular transmission subsystem and
    requires only a reliable ordered data stream channel. Appendices A,
    B, C, and D describe the use of SMTP with various transport services.
    A Glossary provides the definitions of terms as used in this
    document.

    An important feature of SMTP is its capability to relay mail across
    transport service environments. A transport service provides an
    interprocess communication environment (IPCE). An IPCE may cover one
    network, several networks, or a subset of a network. It is important
    to realize that transport systems (or IPCEs) are not one-to-one with
    networks. A process can communicate directly with another process
    through any mutually known IPCE. Mail is an application or use of
    interprocess communication. Mail can be communicated between
    processes in different IPCEs by relaying through a process connected

to two (or more) IPCEs. More specifically, mail can be relayed
between hosts on different transport systems by a host on both
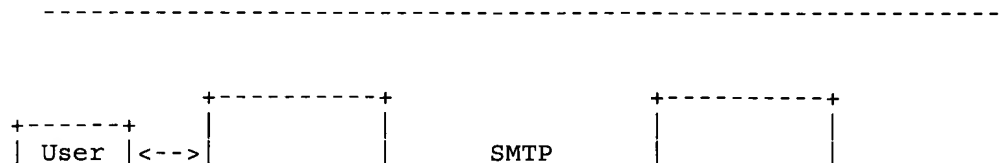transport systems.

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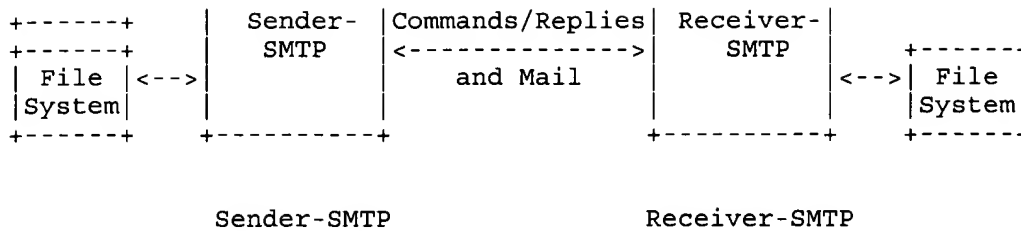

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2. THE SMTP MODEL

   The SMTP design is based on the following model of communication: as
   the result of a user mail request, the sender-SMTP establishes a
   full-duplex transmission channel to a receiver-SMTP. The
   receiver-SMTP may be either the ultimate destination or an
   intermediate. SMTP commands are generated by the sender-SMTP and
   sent to the receiver-SMTP. SMTP replies are sent from the
   receiver-SMTP to the sender-SMTP in response to the commands.

   Once the transmission channel is established, the SMTP-sender sends a
   MAIL command indicating the sender of the mail. If the SMTP-receiver
   can accept mail it responds with an OK reply. The SMTP-sender then
   sends a RCPT command identifying a recipient of the mail. If the
   SMTP-receiver can accept mail for that recipient it responds with an
   OK reply; if not, it responds with a reply rejecting that recipient
   (but not the whole mail transaction). The SMTP-sender and
   SMTP-receiver may negotiate several recipients. When the recipients
   have been negotiated the SMTP-sender sends the mail data, terminating
   with a special sequence. If the SMTP-receiver successfully processes
   the mail data it responds with an OK reply. The dialog is purposely
   lock-step, one-at-a-time.

```
         -------------------------------------------------------------


                  +----------+              +----------+
    +-------+      |          |              |          |
    | User  |<-->| |          |     SMTP     |          |
```

```
+------+        |  Sender-   |Commands/Replies| Receiver-|
+------+        |   SMTP     |<-------------->|   SMTP   |        +------+
| File |<-->|            |    and Mail    |          |    <-->| File |
|System|        |            |                |          |        |System|
+------+        +----------+                +----------+        +------+
```

            Sender-SMTP   Receiver-SMTP

                      Model for SMTP Use

                          Figure 1

    The SMTP provides mechanisms for the transmission of mail; directly
    from the sending user's host to the receiving user's host when the

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    two host are connected to the same transport service, or via one or
    more relay SMTP-servers when the source and destination hosts are not
    connected to the same transport service.

    To be able to provide the relay capability the SMTP-server must be
    supplied with the name of the ultimate destination host as well as
    the destination mailbox name.

    The argument to the MAIL command is a reverse-path, which specifies
    who the mail is from. The argument to the RCPT command is a
    forward-path, which specifies who the mail is to. The forward-path
    is a source route while the reverse-path, is a return route (which
    may be used to return a message to the sender when an error occurs
    with a relayed message).

    When the same message is sent to multiple recipients the SMTP
    encourages the transmission of only one copy of the data for all the
    recipients at the same destination host.

    The mail commands and replies have a rigid syntax. Replies also have
    a numeric code. In the following, examples appear which use actual
    commands and replies. The complete lists of commands and replies
    appears in Section 4 on specifications.

    Commands and replies are not case sensitive. That is, a command or
    reply word may be upper case, lower case, or any mixture of upper and
    lower case. Note that this is not true of mailbox user names. For
    some hosts the user name is case sensitive, and SMTP implementations
    must take case to preserve the case of user names as they appear in
    mailbox arguments. Host names are not case sensitive.

    Commands and replies are composed of characters from the ASCII
    character set [1]. Each 7-bit character is transmitted right
    justified in an 8-bit byte (or octet) with the high order bit cleared
    to zero.